IN THE CLAIMS

1. (currently amended) A method for dynamically allocating and renegotiating bandwidth to traffic having a variable data rate in a network, comprising:

measuring a current data rate of the traffic in the network;

measuring a current bandwidth allocation of the traffic in the network;

predicting a future data rate for the traffic based on the current ~~and previous data rates~~ data rate and the current bandwidth allocation; and

minimizing a cost function based on the current data rate, the current bandwidth allocation, and the future data rate to determine a future bandwidth allocation for the traffic that minimized a cost of the renegotiation bandwidth over time.

2. (original) The method of claim 1 further comprising:

determining a renegotiation cost function for the traffic using a time period between a last renegotiation and a current time.

3. (original) The method of claim 2 further comprising:

increasing a value of the renegotiation cost function if the bandwidth is renegotiated at the current time; and

decreasing the value of the renegotiation cost function if bandwidth is not renegotiated at the current time.

4. (original) The method of claim 1 further comprising:

assigning a first cost functions for an under allocation of bandwidth;

assigning a second cost function to the renegotiation; and

assigning a third cost function for under utilization of the bandwidth.

5. (original) The method of claim 4 further comprising:

bounding the first cost function to a size of a buffer used to store the traffic during the under allocation of the traffic.

6. (original) The method of claim 1 wherein the cost function is

$$J = w_b b(n) + w_u u(n) + T(n)$$

where $w_b b(n)$ is a weighted cost of under allocation, $w_u u(n)$ is a weighted cost of under utilization, and T(n) is a cost of renegotiation the bandwidth.

7. (currently amended) A system for dynamically allocating and renegotiating bandwidth to traffic having a variable data rate in a network, comprising:

~~means for measuring a current data rate of the traffic in the network;~~

~~means for measuring a current bandwidth allocation of the traffic in the network;~~

a predictor configured to predict a future data rate for the traffic based on ~~the~~ a measured current ~~and previous data rates~~ data rate and a measured current bandwidth allocation; and

a renegotiation control unit configured to minimize a cost function based on the current data rate, the current bandwidth allocation, and the

future data rate to determine a future bandwidth allocation for the traffic that minimized a cost of the renegotiation bandwidth over time.